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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/594,510	06/16/2000	Alan G. Wood	M4065.0184/P184	2407
24998	7590	10/21/2004	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			LUU, CHUONG A	
2101 L STREET NW			ART UNIT	
WASHINGTON, DC 20037-1526			PAPER NUMBER	
			2825	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/594,510

Applicant(s)

WOOD ET AL.

Examiner

Chuong A Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 35-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-23 is/are allowed.
- 6) ☒ Claim(s) 1-18 and 35-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/6/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-18 and 35-40 have been considered but are moot in view of the new ground(s) of rejection.

PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 1-18 and 35-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoon et al. (U.S. 6,479,887 B1)

Yoon discloses a semiconductor package with

Respect to claims:

(1) forming conductive structures (14, 23, 19, 13) in contact with a top surface of a dielectric substrate (18) (see Figure 2A);

subsequently, forming a layered assembly by attaching a wafer (2) to said dielectric substrate (18) (see Figure 2B);

forming input/output devices (60) in contact with said conductive traces (14, 23, 19, 13) (see Figure 2E);

testing semiconductor devices in said wafer (see column 11, lines 60-65);

subsequently, dicing said layered assembly (see column 13, lines 34-37. Figure 2F);

(2) further comprising the step of connecting said semiconductor devices to input/output devices (see column 13, lines 26-33. Figure 2E);

(3) wherein said testing is conducted through said input/output devices (see column 11, lines 60-65);

(4) further comprising the step of discarding one or more defective packages (see column 5, lines 20-25);

(5) wherein said step of forming said layered assembly includes the step of adhering said wafer to said dielectric substrate (see Figure 2B);

(6) further comprising the step of electrically connecting said semiconductor devices to ball grid arrays on said dielectric substrate (see Figure 2E);

(7) wherein said connecting step comprises the step of locating wire bonds in openings through said dielectric substrate (see Figures 2C-2D);

(8) wherein said connecting step comprises the step of connecting solder bumps on said wafer to circuit traces on said dielectric substrate (see Figure 2E);

(9); (17) wherein said dicing step is performed by a saw (see column 12, line 24-27);

(10) further comprising the step of providing an electrode pad in said layered assembly (see Figure 2A);

(11) providing conductive structures in contact with a top surface of a dielectric substrate (see Figure 1A);

subsequently, forming a layered assembly by attaching a wafer and a stiff metal layer to said dielectric substrate (see column 10, lines 50. Figure 1A);

placing ball grid arrays in contact with said conductive structures (see Figure 2E);

connecting semiconductor devices in said semiconductor wafer to said ball grid arrays (see column 13, lines 26-33. Figure 2E);

subsequently, dicing said layered assembly (see column 13, lines 34-37. Figure 2F);

(12) wherein said forming step comprises the step of adhering said wafer to said metal layer (see 2A-2B);

(13); (14) wherein said connecting step comprises the step of locating wire bonds in openings through said dielectric substrate (see Figures 2C-2D);

(15) wherein said connecting step comprises the step of connecting solder bumps on said wafer to conductive traces on said dielectric substrate (see Figures 2A-2E);

(16) further comprising the step of connecting said traces to conductive vias extending through said dielectric substrate (see Figure 2A).

(18) further comprising the step of testing said semiconductor devices through said ball grid arrays (see Figure 2E);

(35) adhering said wafer (2) to a flexible substrate (18) (see column 12, lines 7-40. Figures 2A-2B);

connecting said semiconductor devices to respective ball grid arrays (60) located on said substrate (see Figure 2E);

testing said semiconductor devices through said ball grid arrays (see column 11, lines 60-65);

(37) further comprising the step of singulating packages from said wafer and said substrate (see column 13, lines 26-37);

(36); (38) further comprising the step of segregating defective packages from other packages (see column 5, lines 20-25).

Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al. (U.S. 6,479,887 B1) in view of Miyawaki (U.S. 6,268,236 B1).

Yoon discloses everything above except for further comprising the step of attaching said dielectric tape to said wafer by applying heat or pressure to the assembly; and further comprising the step of evacuating gas from said assembly. However, Miyawaki discloses a method of manufacturing a semiconductor chip by (39) further comprising the step of attaching said dielectric tape to said wafer by applying heat or pressure to the assembly (see column 4, lines 34-35); (40) further comprising the step of evacuating gas from said assembly (see column 5, lines 25-32). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings above to attach the dielectric tape to said wafer by applying heat and pressure to the assembly; and further comprising the step of evacuating gas from said assembly during fabrication of a semiconductor device.

Response to Arguments

Applicant's arguments, see Applicant's remarks, filed July 27, 2004, with respect to the rejection(s) of claim(s) 1-23 and 35-40 under Corisis have been fully considered

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and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yoon.

Applicant argues that Corisis fails to disclose all limitations of any of independent claims 1 and 11. However, Yoon discloses a semiconductor package (see column 5, lines 20-25; column 11, lines 60-65; column 12, lines 7-40; column 13, lines 26-37. Figures 2A-2F). Also, Applicant argues that neither Lam nor Kobayashi teach or suggest "adhering said wafer to a flexible substrate. However, Yoon discloses a semiconductor package (see column 12, lines 7-40. Figures 2A-2B).

Allowable Subject Matter

Claims 19-23 are allowed.

Conclusion

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on May 6, 2004 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609(B)(2)(i). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:30-3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1975.

CAL
October 7, 2004

~~PRIMARY EXAMINER~~
~~CANDID EVERHART~~
C. Everhart
CANDID EVERHART
PRIMARY EXAMINER